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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HOFFBERG, ROBERT JOSEPH	
ART UNIT	**PAPER NUMBER**
2835	

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/730,524	HUYNH ET AL.	
	Examiner	Art Unit	
	Robert J. Hoffberg	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7,8,13-17,19-22 and 24-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7,8,13-17,19-22 and 24-30* is/are rejected.

7)☒ Claim(s) *31-33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/30/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Arguments

1. Applicant's arguments filed 6/30/04 have been fully considered but they are not persuasive.

2. The Applicant argues that it is improper to modify Prince et al. with Smithers. The examiner respectfully disagrees. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). MPEP 2145 Section III. Primary reference Prince et al. teaches a clip holder having first and second clip holders and a clip having a first, second and third portions. The third portion of the clip is integral with claimed heat sink. Secondary reference Smithers teaches a clip having a first, second and third portions wherein the third portion of the clip retains a heat sink adjacent to a circuit board component. Smithers teaches a clip and heat sink as separate parts instead of the integral construction of Prince. The clip of Smithers retains the heat sink adjacent to a circuit board component. The examiner has the cited the clip as being #103, #104 and #116. Applicant's reference to #114 as being a clip is an additional part of the third portion of the clip.

3. The Applicant argues that the wire spring of Smithers cannot be utilized to hold the heat sink of Prince et al. against a circuit board component. The examiner respectfully disagrees. Applicant claim states a heat sink with the only limitation that it

needs to be clipped adjacent to a circuit board component. A third portion of a clip of Smithers is a wire form that can be shaped to retain a heat sink of various different geometries including the heat sink of Prince et al. against a circuit board component.

4. The applicant argues that the third portion of the clip does not position the heat sink adjacent to a circuit board component. The examiner respectfully disagrees. The height of outermost folds #103 position the inner folds #116 and determine whether the inner folds are adjacent the circuit board component.

5. The applicant argues that the modification of Prince et al. in view of Smithers would have two heat sinks, one from each of the references. The examiner respectfully disagrees. The examiner's modification of Prince would substitute the separate clip and heat sink of Smithers for the integral clip/heat sink of Prince. The operational purpose of either Prince or Smithers is not changed because a clip is being used to retain a heat sink adjacent to circuit board component.

6. The applicant argues that the clip holder of Kawabe cannot be used to hold a clip. The examiner respectfully disagrees. The structure of the clip holder of Kawabe meets the claimed limitation. The blind threaded hole is a cavity. A first and second portion of the clip can be inserted inside of the minor diameter of the thread. Apparatus claims must be structurally distinguishable from the prior art. MPEP 2114. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-

32 (Fed. Cir. 1997). The cavity of the clip holder inherently allows the clip to be fastened.

7. The applicant argues that the clip holder lacks a surface to interface with automated pick and place equipment. The examiner respectfully disagrees. The applicant in his arguments agrees that the clip holder of Kawabe has a flat surface. Apparatus claims must be structurally distinguishable from the prior art. MPEP 2114. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). The flat surface inherently can interface with the automated pick and place equipment. The automated pick and place equipment is not part of the claim structure. The automated pick and place equipment is an assembly method and does not limit the structure of the device.

Claim Objections

8. Claims 7-8 are objected to because of the following informalities: Delete "and" from the 4th and 7th lines of claim 7. Appropriate correction is required.

9. Claims 31-33 are objected to because of the following informalities: "adjacent opposite" is interpreted by examiner to be "corners diagonally opposite each other". Appropriate correction is required.

10. Claim 33 is objected to because of the following informalities: Delete extra period at end of claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1, 3, 13-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305).

With respect to Claim 1, Prince et al. teach a circuit board module, comprising: a circuit board having surface mount pads; a circuit board component (Fig. 2, #108) mounted to the circuit board (Fig. 5, #106); and a heat sink assembly including: a first clip holder (Fig. 5A, #130 mounted on left side of Fig. 2, #106, Col. 4, lines 3-5) and a second clip holder (Fig. 5A, #130 mounted on right side of Fig. 2, #106, Col. 4, lines 3-5), each clip holder being mounted to respective surface mount pads (Col. 4, line 5) of the circuit board using a surface mount technology soldering process, and a clip having a first portion (Fig. 2, #104, left side) configured to fasten to the first clip holder, a second portion (Fig. 2, #104, right side) configured to fasten to the second clip holder, and a third portion (Fig. 2, #103 and 116) coupled to the first and second portions, the third portion being configured to position the heat sink adjacent (see Fig. 2) the circuit board component when the first and second portions are respectively fastened to the first and second clip holders. The device of Prince et al. is integral with the heat sink. Prince et al. fails to teach a separate heat sink component. Smithers teaches a clip

(Fig. 5, #20) to fasten a heat sink (Fig. 5, #21) to a circuit board component (Fig. 5, #22) mounted on a circuit board (Fig. 5, #18) using clip holders (Fig. 5, #10).

With respect to Claim 3, Prince et al. teach the claimed invention including a first clip holder (Fig. 5A, #130 mounted on left side of Fig. 2, #106, Col. 4, lines 3-5) and a second clip holder (Fig. 5A, #130 mounted on right side of Fig. 2, #106, Col. 4, lines 3-5), each clip holder being configured to mount to surface mount pads (Col. 4, line 5) of a circuit board (Fig. 5, #106) using a surface mount technology soldering process; and a clip having a first portion (Fig. 2, #104, left side) configured to fasten to the first clip holder, a second portion (Fig. 2, #104, right side) configured to fasten to the second clip holder, and a third portion (Fig. 2, #103 and 116) coupled to the first and second portions, the third portion being configured to position the heat sink adjacent (see Fig. 2) a circuit board component (Fig. 2, #108) on the circuit board when the first and second clip holders are mounted to the surface mount pads of the circuit board and when the first and second portions are respectively fastened to the first and second clip holders. Prince et al. fails to show a separate heat sink component. Smithers teaches a clip (Fig. 5, #20) to fasten a heat sink (Fig. 5, #21) to a circuit board component (Fig. 5, #22) mounted on a circuit board (Fig. 5, #18) using clip holders (Fig. 5, #10).

Regarding method claims 13 and 15, the method steps recited in the claims are inherently necessitated by the device structure as taught by Prince et al., in view of Smithers as recited above in the rejection to claims 1 and 3.

With respect to Claim 14, Prince et al. further teach that the second clip holder (Fig. 5A, #130 mounted on right side of Fig. 2, #106, Col. 4, lines 3-5) defines a cavity

(see Fig. 5A) which extends in a direction that is substantially parallel to a plane of the circuit board (Fig. 5A, #106); that the method further comprises: after the first end (Fig. 2, #104, left side) of the clip is fastened to the first clip holder (Fig. 5A, #130 mounted on left side of Fig. 2, #106, Col. 4, lines 3-5), bending (Col. 4, line 7, inward) the clip to align the second end (Fig. 2, #104, right side) of the clip with the cavity defined by the second clip holder.

With respect to Claim 17, Prince et al. teach a heat sink assembly, comprising: surface mounting means (Fig. 5A, #130 mounted on Fig. 2, #106, Col. 4, lines 3-5) for surface mounting to surface mount pads of a circuit board using a surface mount technology soldering process (Col. 4, line 5), and a clip (Fig. 2, #103, #104 and #116) having a first portion (Fig. 2, #104, left side) configured to fasten to the surface mounting means, a second portion (Fig. 2, #104, right side) configured to fasten to the surface mounting means, and a third portion (Fig. 2, #103 and #116) coupled to the first and second portions, the third portion being configured to position (see Fig. 2) the heat sink adjacent a circuit board component (Fig. 2, #108) on the circuit board (Fig. 2, #106) when the surface mounting means mounts to the surface mount pads of the circuit board and when the first and second portions are fastened to the surface mounting means. Prince et al. fails to show a separate heat sink component. Smithers teaches a clip (Fig. 5, #20) to fasten a heat sink (Fig. 5, #21) to a circuit board component (Fig. 5, #22) mounted on a circuit board (Fig. 5, #18) using clip holders (Fig. 5, #10).

It is obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit board module of Prince et al. with that of Smithers to have a

separate heat sink component retained to the component by a clip to improve the dissipation of a circuit board component and to reduce inventory costs by standardizing the heat sink and clip components.

13. Claims 7-8, 19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517), in view of Smithers (US 5,640,305) as applied to the above claims, in further view of Fukui (US 5,270,492) and further in view of Kawabe (US 5,786,989).

With respect to Claim 7, Prince et al. in view of Smithers teach all the limitations of the claims including that each clip holder is elongated (Prince, see Fig. 5A) in shape and includes (i) a first surface mount contact at first end (Fig 5A, #132, left side, Col. 3, lines 64-65) and (ii) a second surface mount contact at a second end (Fig 5A, #132, right side, Col. 3, lines 64-65) opposite the first end, that the surface mount contacts of each clip holder define a plane which is substantially parallel (see Fig. 5A) to the circuit board when that clip holder mounts to the surface mount pads of the circuit board. Prince et al. in view of Smithers fail to teach a clip holder having a non-conductive body portion and contacts having apertures which are substantially perpendicular to the plane and a clip holder. Fukui teaches that the surface mount contacts (Fig. 1, #2) of each clip holder define apertures (Fig. 1, #6) which are substantially perpendicular to a plane of the circuit board. Kawabe teaches in a first embodiment (Fig. 7C) that each clip holder (Fig. 7C, #6) includes: a non-conductive (Col. 3, line 10) body portion (Fig. 7C, #6a) interconnected between the first (Fig. 7C, #6b left side) and second (Fig. 7C, #6b right side) surface mount contacts of that clip holder, the non-conductive body portion

defining a surface (Fig. 7C, #6a top) to interface with automated pick and place equipment and the non-conductive body portion of each clip holder defines a cavity (Fig. 7C, #6c) for fastening with the clip, the cavity extending in a direction that is substantially parallel (see Fig. 7C) to the plane.

With respect to Claim 21, Prince et al. in view of Smithers teach all the limitations of the claims including that each clip holder is elongated (Prince, see Fig. 5A) in shape and includes (i) a first surface mount contact at first end (Fig 5A, #132 left side and Col. 3, lines 64-65) and (ii) a second surface mount contact at a second end (Fig 5A, #132 right side and Col. 3, lines 64-65) opposite the first end. Prince et al. in view of Smithers fail to teach the apertures which are substantially perpendicular to the plane. Fukui teaches that the surface mount contacts (Fig. 1, #2) of each clip holder define apertures (Fig. 1, #6) which are substantially perpendicular to a plane of the circuit board. Kawabe teaches in a first embodiment (Fig. 7C) that a clip holder (Fig. 7C, #6) having a non-conductive (Col. 5, line 10) body portion (Fig. 7C, #6a) interconnected between the first and second mount contacts (Fig. 7C, #6b) of that clip holder, the non-conductive body portion defining a surface (Fig. 7C, #6a top) to interface with automated pick and place equipment and a cavity (Fig. 7C, #6c) for fastening with the clip, the cavity extending in a direction that is substantially parallel (see Fig. 7C) to the plane.

With respect to Claim 8 and 22, Prince et al. in view of Smithers teach all the limitations of the claims except the non-conductive body portion with an interconnecting conductive portion. Kawabe teaches in a second embodiment (Fig. 3) that each clip

holder further includes: an interconnecting conductive portion (Fig. 3, #6d) which electrically interconnects the first and second surface mount contacts of that clip holder, and that part of the interconnecting conductive portion is exposed (see Fig. 3) within the cavity defined by the non-conductive body portion of that clip holder.

With respect to Claim 19 and 20, Prince et al. in view of Smithers teach the all limitations of the clams including that the surface mounting means include a set of clip holders (Prince, Fig. 5A, #130), each clip holder being elongated in shape and including (i) a first surface mount contact (Fig. 5A, #132, left side) at a first end and (ii) a second surface mount contact (Fig. 5A, #132, right side) at a second end opposite the first end. They do not teach a means for percolating gas therethrough, a means for interfacing with automated pick and place equipment and means for electrically connecting the clip to the first and second surface mount contacts of that clip holder. Fukui teaches that each surface mount contact (Fig. 1, #2) including means for percolating gas (Col.2, lines 31-33) therethrough. Kawabe et al. teach that each clip holder further includes: interfacing means (Fig. 7C, #6a top) for interfacing with automated pick and place equipment and means for electrically connecting (Fig. 3, #6d) the clip to the first and second surface mount contacts (Fig. 7C, #6b) of that clip holder.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with the contacts of Fukui and the clip holder of Kawabe to incorporate apertures in the clip holders to improve solderability, provide an insulated clip holder with a flat surface to automate the assembly process and a cavity used to assembly other components to a

circuit board and to provide an electrically conductive path within the body cavity to ground the heat sink to the printed circuit board to minimize EMI.

14. Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305), in further view of Degani et al. (US 5,346,118), in further view of Tanaka et al. (US 5,249,977) in further view of Fukui (US 5,270,492).

With respect to Claim 16, Prince et al. in view of Smithers teach all the limitations of the claims including that the mounting includes: disposing the first and second clip holders (Prince, Fig. 2, #104) over the surface mount pads (Col. 4, line 5) of the circuit board (Fig. 5, #106). They fail to teach the apertures and the surface mount technology manufacturing method. Degani et al. teach the surface mount technology process of circuit board in contact with printed solder paste (Col. 3, line 43); and applying heat to melt (Col. 3, line 44) the printed solder paste and activate flux (Col. 3, line 46) within the printed solder paste (Col. 3, line 45). Tanaka et al. further teach using automated pick and place equipment (Col. 1, line 18). Fukui teaches percolate gas (Col. 2, line 32) through apertures (Fig. 1, #6) defined by the first and second clip holders (Fig. 1, #2). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Prince et al. in view of Smithers with the apertures of Fukui and the surface mount method steps disclosed by Degani et al. and Tanaka et al. to assemble using an automated surface mount technology process and configured for improved solderability.

15. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prince et al. (US 6,208,517) in view of Smithers (US 5,640,305) as applied to the above claims, in view of Kawabe (US 5,786,989) and further in view of Fukui (US 5,270,492).

With respect to Claims 24 and 26, Prince et al. in view of Smithers teach the claimed invention but fail to teach a set of clip holders with a non-conductive body portions and the surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane. Kawabe teaches in a first embodiment (Fig. 7C) a clip holder (Fig. 7C, #6) includes: a first surface mount contact (Fig. 7C, #6b left side) configured to mount to surface mount pads (Fig. 7A, #1c) of the circuit board using a surface mount technology soldering process (Col. 3, line 45), the first surface mount contact being disposed at a first end of the clip holder; a second surface mount contact (Fig. 7C, #6b right side) configured to mount to other surface mount pads of the circuit board using the surface mount technology soldering process (Col. 3, line 45), the second surface mount contact being disposed at a second end of the clip holder which is opposite (see Fig. 7C) the first end; and a body portion (Fig. 7C, #6a) interconnected between the first surface mount contact and the second surface mount contact, the body portion being configured to fasten (Fig. 7C, #6c) with the clip; that the clip holder is elongated in shape (see Fig. 7c) and includes (i) a first surface mount contact (Fig. 7C, #6b left side) at a first end and (ii) a second surface mount contact (Fig. 7C, #6b right side) at a second end opposite the first end; that the surface mount contacts of the clip holder define a plane which is substantially parallel (see Fig. 7A) to the circuit board (Fig. 7A, #1) when that clip holder mounts to the surface mount pads of the circuit

board, and that the surface mount contacts of the clip holder further define apertures which are substantially perpendicular to the plane; that the clip holder further comprises: a non-conductive (Col. 5, line 10) body portion (Fig. 7C, #6a) interconnected between the first and second surface mount contacts of the clip holder, the non-conductive body portion defining a surface (Fig. 7C, #6a top) to interface with automated pick and place equipment; and that the non-conductive body portion of the clip holder defines a cavity (Fig. 7C, #6c) for fastening with the clip, the cavity extending in a direction that is substantially parallel (see Fig. 7C) to the plane. Fukui teaches surface mount contacts (Fig. 1, #2) of the clip holder further define apertures (Fig. 1, #6) which are substantially perpendicular (see Fig. 1) to the plane. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a set of clip holders, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

With respect to Claims 25 and 27, Prince et al. in view of Smithers and further in view of Fukui fail to teach an interconnecting conductive portion with the non-conductive body. Kawabe teaches in a second embodiment (Fig. 3) that each clip holder further includes: an interconnecting conductive portion (Fig. 3, #6d) which electrically interconnects the first and second surface mount contacts of that clip holder, and that part of the interconnecting conductive portion is exposed (see Fig. 3) within the cavity defined by the non-conductive body portion of that clip holder.

With respect to Claims 28-30, Prince et al. in view of Smithers teach the limitations of the claims including that the first portion (Smithers, Fig. 5, #20 top) of the

clip (Fig. 5, #20) defines a first tab; that the second portion (Fig. 5, #20 bottom) of the clip defines a second tab; that each of the first and second tabs has a substantially cylindrical shape (See Fig. 5); and that the third portion (Fig. 5, #20 center) of the clip is configured to provide spring tension (Col. 2, line 32, wire spring) which simultaneously holds (a) the first tab in an inserted position by the first clip holder (Fig. 5, #10 left) and (b) the second tab in an inserted position by the second clip holder (Fig. 5, #10 right). They fail to teach that each clip holder defines a cavity that is substantially cylindrical in shape and has a clip within the cavity. Kawabe teaches a cavity (Fig. 7C, #6c) which is substantially cylindrical in shape (see Fig. 7C).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify heat sink clip of Prince et al. in view of Smithers with the clip holder of Kawabe and the apertures of Fukui to have a shape of the clip to match the shape of the cavity of the clip holder to reliably retain the heat sink against the circuit board component, to insulate the heat sink clip from the first and second surface mount areas and to incorporate apertures in the clip holders to improve solderability and to provide an electrically conductive path within the body cavity to ground the heat sink to the printed circuit board to minimize EMI.

Allowable Subject Matter

16. Claims 31-33 are objected to as being dependent upon a rejected base claim and claim objections above, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: Claims 31-33 are allowable over the art of record because the prior art does not teach or suggest that a circuit board module, heat sink and method have "a first clip holder", "a second clip holder" having "a cylindrical cavity" residing on opposite corners of "a circuit board component", "a clip" having substantially cylindrical "a first tab" and "a second tab" to retain "a heat sink" on "a circuit board component" wherein the movement of the tabs to retain the clip in the clip holder is the tabs move in axes are substantially parallel and substantially opposite each other. The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims over art of record.

18. The closest references to the present invention are believed to be as follows: Sopko et al. (US 6,590,771) and Smithers (US 5,640,305) teach clip holders on opposing corners of a circuit board component and a cylindrical shaped clip tabs that move in parallel and opposite directions, but lack the clip holders with a cylindrical shaped cavity. Bookhardt et al. (US 6,222,734) and Lee et al. (US 6,775,138) teach a clip and clip holders that move in parallel and opposite directions, but lack the clip holders on opposite corners of the circuit board component and the cylindrical shape of the clip and clip holders cavity. These above listed references all lack the specific structure and arrangement in claims 31-33.

19. None of the cited references, either taken alone or in combination is believed to render the present invention unpatentable as claimed.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kiyose (US 4,991,059), Kogure et al. (US 5,148,349), Torigian et al. (US 6,623,283) and Downes (US 6,552,277) teach using holes, channels and grooves, respectively, to improve a solder joint.

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL DATSKOVSKIY
PRIMARY EXAMINER

RJH

07/21/06